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FACTORS IMPACTING KNOWLEDGE TRANSFER SUCCESS IN INFORMATION SYSTEMS OUTSOURCING

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Abstract

Despite increased research interest on knowledge transfer in information systems (IS) outsourcing, the field still lacks sound and holistic understanding of the key factors influencing knowledge transfer success. The present paper attempts to provide a synthesis of existing theoretical perspectives and empirical findings related to the factors that facilitate or hamper knowledge transfer success in IS outsourcing. The data collection method is discussed and the key findings are presented. Conclusion is drawn and further research is suggested.

Keywords: knowledge transfer, Information systems (IS) outsourcing

1 BACKGROUND

In today's knowledge-based economy, one of the major sources of competitive advantage has been the ability of the firm to transfer external knowledge efficiently and effectively (Argote and Ingram, 2000; Pawlowski and Robey, 2004; Sambamurthy and Subramani, 2005; Pérez-Nordtvedt *et al.*, 2008). Knowledge transfer is defined by Kumar and Ganesh (2009) as activities of exchanging explicit or tacit knowledge between two agents, during which one agent receive and apply the knowledge provided by the other agent. The agents could be an individual, team/department or an organization (Joshi *et al.*, 2007). In the literature, knowledge transfer has been given various but related labels such as 'knowledge sharing, 'knowledge flows', 'knowledge acquisition' and 'knowledge mobilization' (Carmel and Nicholson, 2005; Gosain, 2007; Renzl, 2008; van Wijk *et al*, 2008).

Information systems (IS) outsourcing, where a client organization contract out some or all of its IS functions to one or more external vendors (Lee, 2001), has been regards as an important business strategy for client organizations to transfer new technical and business knowledge from the vendors (e.g. Ko *et al.*, 2005; Tafti, 2007, Blumenberg *et al.*, 2009). Wang *et al.* (2008) argued that outsourcing IS to high quality vendors has the potential to transfer knowledge that are costly or hard to develop in-house. Furthermore, IS outsourcing allows the client organizations to renew its technical and business knowledge base in order to achieve congruence with changing business environment (Bandyopadhyay and Pathak, 2007). In their

study of knowledge transfer in enterprise resource planning (ERP) implementations, Ko *et al*. (2005) reported that client organizations acquire new implementation, operational and maintenance knowledge from their consultants, so they can learn and later maintain the system independent of the consultant's team. Edguer and Pervan (2004) found that many firms are increasingly looking at IS outsourcing as a means of transferring and leveraging the vendors' superior technical and business knowledge and benefiting complementary skills and specialist expertise that are not available within the organization's boundaries. Knowledge transfer from vendors to clients in IS outsourcing projects occur through a variety of mechanisms. These mechanisms include manuals, personal movement, training, observation, presentations and close interaction with vendors' IS staff (Nicholson and Sahay, 2004; Xu *et al.*, 2006; Chua and Pan, 2008)

Knowledge transfer success has been defined in the literature using various approaches. One approach of defining transfer success is by measuring the number of knowledge transfers engaged during a certain period of time (Cummings and Teng, 2003). A second approach was suggested by Laframboise *et al.* (2007) as the one that is both effective (properly transmitted and used) and efficient (using minimal resources). A third approach to defining knowledge transfer is by assessing the extent to which the recipient perceives the knowledge transferred from the source as comprehensive, useful and satisfactory (Li and Hsieh, 2009). The success of knowledge transfer not only depends on the capability of the source to provide the necessary knowledge, but also on the characteristic of the knowledge (Argote *et al*., 2000; McEvily and Chakravarthy, 2002) and the intention and the ability of the receiver to absorb and utilize the transferred knowledge (Steensma and Lyles, 2000; Tsang, 2002; Zahra and George, 2002). Moreover, differences in cultures, structures and goals between the source and the recipient of knowledge may impede collaboration and consequently hinder knowledge transfer (Lee, 2001; Levina and Vaast, 2008; Salmi and Torkkeli, 2009).

In spite of the recognized importance and the potential value of knowledge transfer in IS outsourcing , little systematic and holistic research has been pursued to understand the key factors affecting knowledge transfer success from the vendors to the client in IS outsourcing (Joshi *et al.*, 2007). Furthermore, without a comprehensible understanding about the key factors that contributes to effective knowledge transfer, managers are "left in the dark" as to what they can do to foster valuable knowledge transfer when outsourcing IS (Levin, *et al.*, 2004, p. 36). Therefore, the aim of the present paper is to analysis the literature to answer the following question: What are the key factors that facilitate or inhibit knowledge transfer success from vendors to clients in IS outsourcing?. In this study, the vendor (i.e. service provider) is the source of knowledge and the client (i.e. service receiver) is the recipient of knowledge. The remainder of the paper is laid out as follows. The next section describes the process of data collection and analysis. Afterwards, the key findings and discussion are presented. The Conclusion section covers contributions of this paper, implications and opportunities for future research.

2 DATA COLLECTION AND ANALYSIS

This study attempted to review the IS, knowledge management and strategic management literature that is mainly published in prestigious journals in the last nine years [2000-2009]. Books and press papers were excluded in this study. Only certain number of high profile related conferences was investigated. This is consistent with recommendation of Gonzalez *et al.* (2006) who carried out a review of IS outsourcing literature and argued that practitioners and academics prefer using 'high profile' journals to acquire and disseminate new knowledge.

Major online databases such as ScienceDirect, ABI/ Inform, Business Source Premier and ACM Digital Library were searched for related articles. Index search of some leading IS and Knowledge Management journals such MISQ, Journal of Strategic Information Systems, Journal of Knowledge Management and Information & Management was also carried out to identify key related articles. A keyword search method using a combination of search terms such as ''knowledge transfer'' and ''IS outsourcing,'' or ''knowledge transfer'' and ''IT outsourcing'' was employed. The searches were limited to the period from January 2000 to December 2009 in order to extract relatively recent related articles. This search lead to the identification of 91 articles related to knowledge transfer in IS outsourcing.

Given the goal of this study is to gain a depth understanding of various factors already identified by other researchers, content analysis was deemed to be an appropriate analysis approach. This is consistent with recommendation of Silverman (2000) who argued that content analysis is the most appropriate technique for analyzing texts such as academic articles. Twenty articles (shown in Table 1) were found to contain discussion about some of the factors that impact knowledge transfer in IS outsourcing.

3 FINDINGS AND DISCUSSION

The compiled articles suggested that there are four main sets of factors that influence knowledge transfer success in IS outsourcing. These sets are: knowledge-related factors, recipient-related factors, source-related factors and relationship-related factors. Table 1 shows the key studies that have discussed some of the factors the influence knowledge transfer success in IS outsourcing. It is worth noting that some of these factors are labelled differently in the literature.

Factor / **Study**	Knowledge-related Factors			Recipient-related Factors			Source-related Factors		Relationship-related Factors	
	Tacitness	Complexity	Causal ambiguity	Learning intent	Absorptive capacity	Motivation	Capability	Credibility	Organizational distance	Social ties
Blumenberg *et al*., 2009	✓									
Gregory *et al.*, 2009						✓	✓	✓	✓	
Xu and Ma, 2008	✓		✓	✓	✓	✓		✓		
Han *et al.*, 2008										
Lee *et al*., 2008	✓							✓		
Joshi *et al*., 2007							✓	✓		

Gosain, 2007	✓	✓						✓		
Wang *et al.*, 2007					✓		✓			
Bandyopadhyay and Pathak, 2007				✓						
Srivardhana and Pawlowski, 2007					✓		✓			
Park *et al.*, 2007					✓					
Pardo *et al.*, 2006	✓	✓				✓		✓	✓	
Xu *et al.*, 2006					✓					
Mirani, 2006								✓	✓	✓
Ko *et al.*, 2005					✓	✓		✓		
Imsland and Sahay, 2005	✓								✓	
Sarker *et al.*, 2005							✓	✓	✓	✓
Nicholson and Sahay, 2004	✓								✓	
Lee, 2001	✓				✓			✓		
Timbrell *et al.*, 2001			✓		✓	✓		✓		

Table 1: Factors influencing knowledge transfer success in IS outsourcing

3.1 Knowledge-related

The nature and the characteristics of the knowledge being transferred have been recognized as important factors that impact knowledge transfer success. Blumenberg *et al.*, (2009) studied knowledge transfer process in IS outsourcing projects and found that knowledge transfer success is affected by the tacitness of the knowledge, or how easy or difficult it is to codify and articulate the knowledge that need to be transferred. Tacit knowledge is hard to be transferred verbally or in writing as it resides in the minds of people (Gottschalk, 2006; Hackney *et al.*, 2008). The complexity of knowledge has also been regarded as a major impediment to the success of knowledge transfer. Knowledge complexity refers to the number of interdependent routines, individuals, technologies and resources linked to a particular knowledge (Gosain, 2007). Narteh (2008) contended that complex knowledge is likely to involve many interdependent components and may be difficult to be communicated between the source and the recipient. Causal ambiguity is another inhibitor of knowledge transfer success. Xu and Ma (2008, p. 529) defined causal ambiguity as "the lack of understanding of the logical linkage between action and outcomes, inputs and outputs, and causes and effects". Timbrell *et al.* (2001) examined the characteristics of knowledge in IS outsourcing projects in Australia and found that knowledge with high causal ambiguity is more challenging and much harder to transfer than less ambiguous knowledge. It can be concluded, therefore, that the greater the ambiguity of the causes and effects of the knowledge, the more difficult is to identify the related knowledge elements and subsequently the chances of transferring the knowledge are limited.

3.2 Recipient- related

The transfer of knowledge depends not only on the characteristics of the knowledge transferred but also on the learning intent, absorptive capacity and motivation of the recipient of knowledge. Learning intent is the extent to which the receipt has the potential to learn and acquire new knowledge and skills proposed by the source (Tsang, 2002). Learning intent is found to enhance the amount of knowledge transferred (Narteh, 2008). If the recipient has a high learning intention and is very self-motivated to acquire knowledge possessed by the source, it will be better prepared psychologically to understand and assimilate the knowledge (Easterby-Smith *et al.*, 2008). Bandyopadhyay and Pathak (2007) explored knowledge sharing in outsourcing project and found that knowledge sharing success depends on the learning intent of the recipient and the time and efforts employed to acquire the knowledge. Another factor that found to influence knowledge transfer success is absorptive capacity. Absorptive capacity is defined as the ability of the recipient to recognize the value of the new knowledge provided by the source, assimilate it and apply it to business ends (Schmidt, 2010). The study of Ko *et al.* (2005), mentioned above, explained how knowledge transfer success is much related to that capacity of the clients (recipient) to absorb the transferred ERP knowledge from the consultants (source) and effectively apply it to commercial ends. Zahra and George (2002), on the other hand, found that *lack of absorptive capability* is one of the primary factors that hamper knowledge transfer success. The underlying premise is that a recipient's stock of prior related knowledge and experience is essential to effectively absorb and utilize external knowledge (Srivardhana and Pawlowski, 2007). An important factor that has been identified by the literature to impact knowledge transfer success is the motivation of the recipient to explore and acquire valuable knowledge (Ko *et al.*, 2005). Xu and Ma (2008) investigated the key determinants of ERP implementation knowledge transfer and found that the stronger the motivation to learn, the more likely it is that individuals will attempt to master and use new external knowledge. Motivations for transferring knowledge range from extrinsic incentives such as bonuses to intrinsic motivations such as praise and public recognition (Ko *et al.*, 2005; Chua and Pan, 2008).

3.3 Source-related

The third set of factors is related to the source of the knowledge. The two factors that are identified in this set are called source capability and source credibility. Source capability is the extent to which the receipt views the source as capable and expert and has a wealthy technical and business knowledge-base (Joshi *et al.*, 2007). Capable and committed source tend to devote time and resources to support the transfer of knowledge to the recipient (Ko *et al.*, 2005; Gregory *et al.*, 2009). Tan (2009) investigated the factors affecting IS outsourcing success and found that vendor capability is essential as a capable vendors tend to possess great reservoirs of knowledge, skills and expertise. A study by Wang *et al.* (2007, p. 206) on knowledge transfer in ERP implementation highlighted the importance of consultants' (i.e. source) capability "to offer related and needed knowledge, to mobilize various skills, and to help the client configure and derive value from the ERP package". Source credibility is also found to facilitate knowledge transfer. Joshi *et al.* (2007, p. 326) defined source credibility as "the extent to which a recipient perceive a source to be trustworthy and reputable". Trust is the believe that the source' word is reliable and that it will fulfil its obligation as stipulated in the agreement (Timbrell *et al.*, 2001). Lee *et al.* (2008) investigated the impact of trust on IS outsourcing success and found that mutual trust facilitate knowledge sharing between vendors and clients. Reputation has been regarded as central for knowledge transfer success because it is often used in screening and

evaluating the value of the source of knowledge (Joshi *et al*., 2007). Initiating a knowledge transfer from a credible and trustworthy source tend to be less challenging (Lander *et al.*, 2004). However, in the absence of trust, recipient perceives a source's knowledge to be less valuable and not much persuasive (Ko *et al.*, 2005).

3.4 Relationship-related

The nature of the relationship and the interaction between individuals of the client and the vendor organizations found to impact the effectiveness and the success of knowledge transfer in IS outsourcing (Ko *et al.*, 2005). Ranft and Lord (2002) argued that many of the knowledge transfer difficulties stem from organizational issues and human resource conflicts between the source and the recipient of knowledge. The two key factors that have been identified are: organizational distance and social ties. Organizational distance measures the degree of organizational integration between the source and the recipient of knowledge (Cummings and Teng, 2003). The knowledge transfer literature identified three main types of organizational distance, namely physical distance, organizational culture distance and national culture distance.

Physical distance refers to the difficulty, time requirement and expense of communicating and getting together face-to-face (Cummings and Teng, 2003). Nicholson and Sahay (2004) studied knowledge transfer in software offshore outsourcing project between a British firm and an Indian vendor and found that geographical separation negatively influences knowledge transfer , resulting in serious misunderstanding. Organizational culture distance is the extent to which the source and the receipt of knowledge possess different work values, ideologies, norms and, problem-solving approaches (Ko *et al.*, 2005). Difficulties in knowledge transfer tend to arise when there are differences in organizational culture. Krishna *et al.* (2004) explored the impact of organizational culture distance in IS offshore outsourcing between a Japanese client and an Indian vendor. The study revealed that Japanese take much longer time to reply to e-mails as compared to Indians, and this had negative impact on knowledge transfer between the two parties. National culture distance has been widely recognised as a major inhibitor for knowledge transfer between the source and the recipient in IS outsourcing, particularly when it comes to offshore outsourcing (Imsland and Sahay, 2005; Huang and Trauth, 2007). National culture distance is when the source and the recipient of knowledge lack a common language, values, beliefs and cultural background understanding (Narteh, 2008). Goles and Chen (2005) investigated the key relationship factors that impact IS outsourcing and found that cultural background difference and language incompatibility can be a major stumbling block for outsourcing relationships in general and knowledge transfer in particular. Therefore, it can be concluded that insufficient background about each other, lack of a common languages and cultural misunderstanding limits the ability of the client to transfer knowledge from the vendor in IS outsourcing.

Social ties has received a great deal of attention in inter-organizational collaboration literature (e.g. Adler and Kwon, 2002; Jasimuddin, 2007; Bell and Zaheer, 2007), particularly in knowledge intensive works such as IS outsourcing (e.g. Kotlarsky and Oshri, 2005). Oshri *et al.* (2007) conducted a qualitative case study to explore how globally distributed information systems development work is affected by socialization and face-to-face meetings. The study found that face-to-face meetings allow IS professionals from the client and vendor organizations to develop interpersonal relationship and therefore exchange knowledge informally. Other knowledge transfer studies emphasized the importance of personal ties in facilitating the communication of no-codified knowledge. For example, Blumenberg *et al.*, (2009) suggested that frequent face-to-face interaction is crucial for transferring technical tacit knowledge in IS

outsourcing projects. However, this demands a close partnership between the client and the vendor (Kern and Willcoks, 2000; Goles and Chen, 2005).

4 CONCLUSION

Although there is a drawing acknowledgment of the importance of knowledge transfer in IS outsourcing, very little is known about the key factors that determine the success of knowledge transfer from vendors to clients. This study has presented an attempt to review the literature in order to further deepening our understanding of the key factors that affect knowledge transfer success in IS outsourcing. The findings suggest that there are four set of factors: knowledge-related, recipient-related, source-related and relationship-related that facilitate or inhibit knowledge transfer success. Although this paper does not claim to be exhaustive, the findings presented have several important implications for IS researchers and practitioners alike. This review of prior related studies attempts to set theoretical foundation for future research that should lead to the development of a multifaceted framework for knowledge transfer in IS outsourcing. This study also provides new insights and implication for manger of client organizations by raising their awareness of the critical factors that enable or inhibit knowledge transfer in IS outsourcing projects.

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